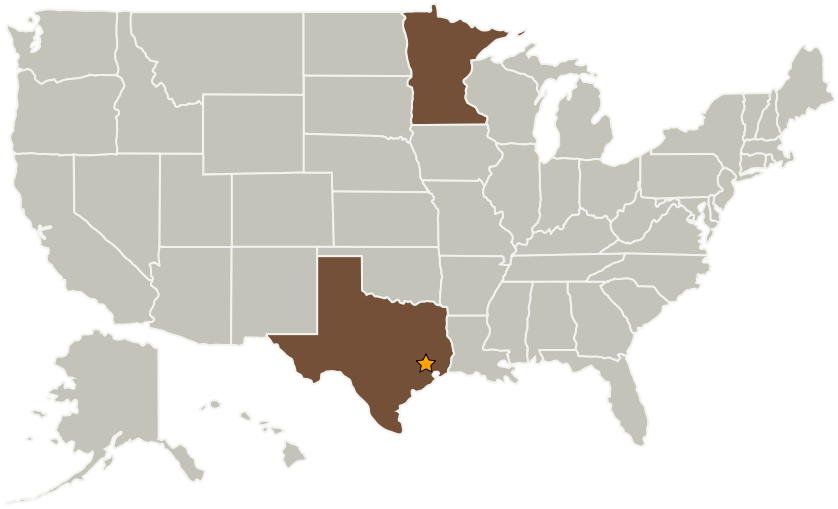
Enhancing the Processing Characteristics of Edible Beans, Phase I

Completed Technology Project (2005 - 2005)

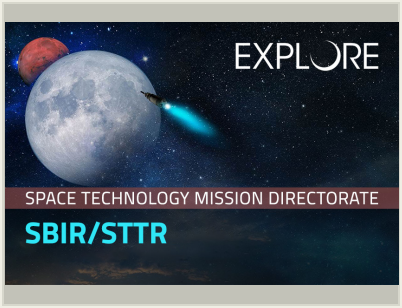
Project Introduction

Advanced life-support systems, which use chemical, physical, and biological processes, are being developed to support future long-term human planetary exploration. As a result, there is a need to develop innovative food processes for baseline crops, such as dry beans (legumes) that have a shelf-life of more than one year and can support human life during extended space travel. Legumes are hydrated in large volumes of water to about 50% moisture to help reduce process times. Hydration is lengthy often requiring more than 8 hours using room temperature water, or boiling water for 2-3 minutes followed by soaking for at least one hour. Additionally, long cooking times ranging from about 30 minutes to over 2 hours are also required. We propose a reduction in the time, energy, and water requirements for processing legumes by using a novel combination of food grade carbohydrases to enhance the processing characteristics of legumes (Pinto, Navy and Kidney beans) prior to implementation of conventional (boiling, cooking, canning or microwaving) techniques.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Chi's Research Corporation	Supporting Organization	Industry	Minnetonka, Minnesota



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Minnesota	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Uchenna Chukwu

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.1 In-Situ Resource Utilization
    - TX07.1.3 Resource Processing for Production of Mission Consumables